



### Basic Course Information

Semester:	Winter 2026	Instructor:	Pat Barbee
Course Title #:	<b>AUT120 Machine Shop</b>	Email:	<b>pat.barbee@imperial.edu</b>
CRN#:	<b>15251</b>	Webpage (optional):	
Classroom:	<b>1100</b>	Office#:	<b>1104A</b>
Class Dates:	<b>05 January-February 04</b>	Office Hours:	<b>Monday-Friday 2:00-3:00pm</b>
Class Days:	<b>M-F</b>	Office Phone#:	<b>760-355-6357</b>
Class Times:	<b>8:00 AM-2:05pm</b>	Emergency Contact:	<b>Tisha Nelson: 760-355-6361</b>
Units:	<b>4</b>	Class Format:	<b>Face to Face</b>

### Course Description

*Review and advanced study of internal combustion engine and service procedures in the use of automotive machine shop tools and machines for rebuilding the engine. {CSU}*

### Course Prerequisite(s) and/or Co-requisite(s)

None.

### Student Learning Outcomes

Upon course completion, the student will have acquired new skills and be able to.

1. Describe engine size measurements based on bore, stroke, displacement, and number of cylinders.
2. Explain engine compression and how it affects engine performance.
3. Explain engine torque and horsepower ratings.
4. Explain volumetric efficiency, thermal efficiency, mechanical efficiency, and total engine efficiency.

### Course Objectives

Student will be able to.

1. demonstrate knowledge of safety in the shop.
2. recognize and demonstrate the use of tools and equipment used in the automotive shop.
3. explain basic engine operation.
4. diagnose the need for engine tear down.
5. disassemble, analyze and reconstruct the automotive engine.



## Textbooks & Other Resources

Automotive Machining ISBN:9781613257173 Machining Fundamentals  
11th Edition ISBN 9781649250

## Course Requirements and Instructional Methods

**As provided or required, all students and faculty will bring, make use of at each class such (PPE) personal protective equipment as to provide personal protection for the work being performed. All students will secure use of as provided or required an OSHA/ANSI approved:**

**Out of Class Assignments:** The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

### Methods of instruction for learning:

- Lecture
- Institutional Technology Presentations
- Group and Individual Discussions
- Demonstration
- Outside Assignments

### Learning activities

- Individual and group learning activities
- Individual and group discussions
- Individual and group oral presentations
- Individual and group classroom/lab demonstrations
- Other, as the instructor may determine appropriate in and out of class learning assignments, use of computer technology, writing assignments and library research assignments

**ATTENDANCE; First day of class, regular attendance and withdrawal after exceeding the number of class hour per week.**

**TARDINESS; Three times equals one absence IVC catalog 09-10**

**ABSENCES; 3 absences =to automatic drop of the class JVC catalog 09-10 pg 24**

## Attendance

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should



readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See [General Catalog](#) for details.

- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.
- Students who stop attending class will be awarded an F letter grade and it is the students' responsibility to drop the course should they decide to stop attending.
- ATTENDANCE; First day of class, regular attendance and withdrawal after exceeding the number of class hour per week.
- TARDINESS; Three times equals one absence IVC catalog 09-10
- ABSENCES; 3 absences = to automatic drop of the class IVC catalog 09-10 pg 24

## Grading

Grading will be based on the following Methods.

A- A- 513-570 of points= Excellent

B- 456-512 of points= Good

C - 399-455 of points= Acceptable

D - 342-398 of points= Below Average

F - 341 points and below= Failing

Homework (14 assignments\*5pts each)- 70 points

Quizzes (29 quizzes\*10pts each)-290 points

Labs (13 labs\*10pts each)- 130 points

Final Exam-80 points

Total Points-570 points

Exams will consist of information from class lectures, reading assignments, homework, videos ,and lab activities.

\*\*\*There are no make-up exams unless arrangements with the instructor are made prior to exam.

## Anticipated Class Schedule/Calendar

Date or Week	Activity, Assignment, and/or Topic	Pages
January 5	Syllabus & Introduction, Safety procedures review, Safety Test Machining Fundamentals Chapter 3	Pages 29-37
January 6	Chapter 5 Precision Measurement. Machining Fundamentals Quiz Chapter 5	Page 57-77
January 7	Review of Chapter 5. Quiz Machining Fundamentals	Page 57-77
January 8	Chapter 4 Understanding Drawings. Machining Fundamentals Quiz Chapter 4	Page 41-54
January 9	Chapter 14 The Lathe. Machining Fundamentals Quiz Chapter 14	Pages 215-249
January 12	Chapter 15 Other Operations. Machining Fundamentals Quiz Chapter 15	Pages 253-266
January 13	Chapter 15 Other Lathe Operations. Machining Fundamentals	Pages 253-266
January 14	Chapter 12 Drills & Drilling Machines. Machining Fundamentals. Quiz Chapter 12	Pages 173-203



January 15	Chapter 2 Precision Measurements. Automotive Machining	Pages 15-31
January 16	Basic Welding and Oxyacetylene cutting	
January 19	Holiday	
January 20	Basic Welding and Oxyacetylene cutting	
January 21	Chapter 3 Cylinder Disassembly & Inspection.	Pages 64-71
January 22	Chapter 5 Crankshaft Measurements. Quiz CH 5	Pages 64-71
January 23	Chapter 6 Connecting Rod Inspection & Reconditioning	Pages 72-74
January 26	Chapter 6 continued Quiz Chapter 6	
January 27	Chapter 7 Push Rods and Lifters Quiz Chapter 7	Pages 82-84
January 28	Chapter 8 Pistons	Pages 89-96
January 29	Chapter 9 Cylinder Head Inspection	Pages 99-111
January 30	Chapter 10 Engine Block Machining	Pages 112-119
February 2	Chapter 13 Clearance Checking Homework Chapter 13	Pages 149-157
February 3	Final Exam!!!!!!	

\*\*\*Subject to change without prior notice\*\*\*